



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,246	08/10/2000	SHUMIN WANG	98124X205843	6397

29050 7590 11/19/2002

PHYLLIS T. TURNER-BRIM, ESQ., LAW DEPARTMENT
CABOT MICROELECTRONICS CORPORATION
870 NORTH COMMONS DRIVE
AURORA, IL 60504

EXAMINER

BROWN, CHARLOTTE A

ART UNIT	PAPER NUMBER
----------	--------------

1765

DATE MAILED: 11/19/2002

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/636,246

Applicant(s)
Wang et al.

Examiner
Charlotte Brown

Art Unit
1765



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 29, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31, 36-44, and 47-51 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31, 36-44, and 47-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

Art Unit: 1765

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-31, 36-44, and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 5,770,103).

Wang discloses aqueous slurries which are useful for the chemical-mechanical polishing of substrates. The polishing slurries are used in the chemical-mechanical polishing of composites comprised of a titanium and another metal. The other metal commonly used is tungsten, aluminum, or copper (Column 2, lines 16-21). The slurry comprises water, abrasive particles, an oxidizing agent, and a compound. The abrasive particles in the composition of the present invention may be alumina, silica, ceria, and zirconia (Column 2, lines 23-26). The oxidizing agent may be comprised of any of the common oxidizing agents such as nitrates, iodates, chlorates, perchlorates, and peroxides (Column 2, lines 32-35). The composition may further comprise compounds which act as complexing agents or chelating agents. These compounds include polycarboxylic acid (Column 2, lines 60-62). This reads on the applicant's limitation of the system comprising a polishing additive. The system also comprises a compound which is a

Art Unit: 1765

mono-, di-, or substituted phenol wherein at least one of the substituted functional groups is polar. The functional groups include amine and nitro groups (Column 2, lines 4-10). Since the compound can comprise an amine group, this reads on the applicant's limitation of a stopping compound containing a cationically charged nitrogen containing compound selected from compounds comprising amines, imines, amides, imides, and mixtures thereof. In one embodiment of the invention, the polishing composition is used to polish a tungsten and a layer of titanium/titanium nitride. According to Table 1, the titanium/titanium nitride layer is polished faster than the tungsten layer. Therefore, the polishing selectivity of titanium nitride layer is greater than the tungsten layer.

Unlike the claimed invention, Wang does not teach a stopping compound with a polishing selectivity of the first metal layer :second metal layer of at least about 30:1. He does teach that the second metal layer is polished faster than the tungsten layer. It is the Examiner's position that a person having ordinary skill in the art would have found it obvious to increase the polishing selectivity of the slurry between the two materials in order to remove the second layer from the substrate.

3. Applicant's arguments filed August 27, 2002 have been fully considered but they are not persuasive.

In traversing the rejection based on Wang, the applicant states that Wang does not disclose a polishing system with at least one stopping compound wherein the cationically

Art Unit: 1765

charged nitrogen containing compound is selected from the group consisting of amines, imines, amides, imides, and mixtures thereof. This point is not accepted sine Wang teaches a polishing system which comprises a compound which is a mono-, di-, or substituted phenol wherein at least one of the substituted functional groups is polar. The functional groups can include amine and nitro groups (Column 2, lines 4-10). Since the compound can comprise an amine group, this reads on the applicant's limitation of a stopping compound containing a cationically charged nitrogen containing compound selected from compounds comprising amines, imines, amides, imides, and mixtures thereof.

The applicant argues that Wang discloses a neutrally charged compound and not a cationically charged compound. The applicant has not provided evidence to show that the compound is a neutrally charged compound. Examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration include statements regarding unexpected results, commercial success, and inoperability of the prior art (See *In re Schulze*)

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (US 6,069,080 , US 6,099,394, and US 6,022,264)

Art Unit: 1765

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

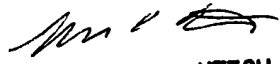
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication from the Examiner should be directed to Charlotte A. Brown whose telephone number is 703-305-0727. The Examiner can normally be reached during the hours of 9:00AM to 6:30PM.

The fax phone numbers where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

CAB

November 15, 2002


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700